

IN THE CLAIMS

Complete listing of the claims:

1. (Currently amended) A motor actuator in which a driving force of a motor is transmitted to a driven member through a driving force transmission mechanism to operate the driven member,

wherein, the driving force transmission mechanism comprises:

a gear train part having a gear which is rotationally driven by the motor;

a tooth-missing gear which is rotationally driven by the gear; and

a rack member which is linearly driven by the tooth-missing gear to operate the driven member;

wherein the tooth-missing gear is provided with a gear part formed with teeth around an entire circumference and structured to engage with the gear, and a tooth-missing gear part, and a teeth part is formed at a predetermined position of the tooth-missing part over only a part of the entire circumference in a circumferential direction of the tooth-missing gear, and a side area in the circumferential direction of the teeth part is formed with a move preventing part for preventing movement of the rack member; and

the rack member is provided with a first rack part, which causes the rack member to move in one direction to a first position when the motor rotates in one direction and the first rack part engages with the teeth part, and a second rack part which causes the rack member to move in the other direction to a second position when the motor rotates in the one direction and the second rack part engages with the teeth part;

the first rack part and the second rack part are extended in parallel to each other so as to interpose the tooth-missing gear between the first rack part and the second rack part;

one end ~~portions~~ portion of the first rack part and one end portion of the second rack part are connected with each other through a connecting part; and

an other end portion of the first rack part and an other end portion of the second rack part are separated from each other so as to form a separated space between the other end portions of the first rack part and the second rack part;

the gear is disposed on an opposite side to the connecting part with respect to the tooth-missing gear; ~~and~~

the gear is engaged with the gear part of the tooth-missing gear through the separated space; and

when the rack member is moved to one of the first position and the second position, the teeth part of the tooth-missing gear part is rotated until the teeth part is separated from the first rack part and the second rack part; and

when the rack member is located at at least one of the first position and the second position, movement of the rack member is prevented by the move preventing part of the tooth-missing gear part.

2. (Original) The motor actuator according to claim 1, wherein the tooth-missing gear part is in a non-engagement state with the second rack part when the tooth-missing gear part engages with the first rack part and the tooth-missing gear part is in a non-engagement state with the first rack part when the tooth-missing gear part engages with the second rack part.

3. (Cancelled)

4. (Original) The motor actuator according to claim 1, wherein the rack member is provided with a pair of inner side portions between which the gear is disposed and which are extended in parallel to each other, and the first rack part is formed in one of a pair of the inner side portions and the second rack part is formed in the other of a pair of the inner side portions.

5. (Cancelled)

6. (Currently amended) An opening/closing device provided with the motor actuator recited in claim 1, wherein the driven member is an opening/closing member whose position is changed between an open position and a close position by the rack member, and when the rack member is located at the first position, the opening /closing member is located at the open position and, when the rack member is located at the second position, the opening/closing member is located at the close position.

7. (New) The motor actuator according to claim 1, wherein the move preventing part of the tooth-missing gear part is formed in a thin plate part whose outer circumferential edge portion is formed in a circular arc shape, and

the first rack part is formed with two parts which are disposed so as to be separated from each other; and

when the rack member is located at least one of the first position and the second position, the two parts of the rack member are engaged with the thin plate part formed in the circular arc shape to prevent the movement of the rack member.

8. (New) The motor actuator according to claim 7, wherein the first rack part is formed with a first tooth part, a second tooth part, a third tooth part, and a fourth tooth part in this order, and the first tooth part and the third tooth part are the two parts of the rack member which are engaged with the thin plate part of the tooth-missing gear part, and a thickness of the second tooth part is formed thinner than thicknesses of the first tooth part, the third tooth part, and the fourth tooth part so that the thin plate part is capable of overlapping in an axial direction with the second tooth part.

9. (New) An opening/closing device comprising:

a motor actuator in which a driving force of a motor is transmitted to an opening/closing member whose position is changed between an open position and a close position through a driving force transmission mechanism;

wherein, the driving force transmission mechanism comprises:

a gear train part having a gear which is rotationally driven by the motor;

a tooth-missing gear which is rotationally driven by the gear; and

a rack member which is linearly driven by the tooth-missing gear to operate the opening/closing member to the open position and the close position;

wherein the tooth-missing gear is provide with a gear part formed with teeth around an entire circumference and structured to engage with the gear; and a tooth-missing gear part, a teeth part is formed at a predetermined position of the tooth-missing gear part over only a part of the entire circumference in a circumferential direction of the

tooth-missing gear, and a side area in the circumferential direction of the teeth part is formed with a move preventing part for preventing movement of the rack member; and

the rack member is provided with a first rack part, which causes the rack member to move in one direction to the open position when the motor rotates in one direction and the first rack part engages with the teeth part, and a second rack part which causes the rack member to move in the other direction to the close position when the motor rotates in the one direction and the second rack part engages with the teeth part;

the first rack part and the second rack part are extended in parallel to each other so as to interpose the tooth-missing gear between the first rack part and the second rack part; and

one end portion of the first rack part and one end portion of the second rack part are connected with each other through a connecting part; and

when the rack member is moved to one of the open position and the close position, the teeth part of the tooth-missing gear part is rotated until the teeth part is separated from the first rack part and the second rack part; and

when the rack member is located at least at one of the open position and the close position, movement of the rack member is prevented by the move preventing part of the tooth-missing gear part.

10. (New) The opening/closing device according to claim 9, wherein the tooth-missing gear part is in a non-engagement state with the second rack part when the tooth-missing gear part engages with the first rack part and the tooth-missing gear part is in a non-engagement state with the first rack part when the tooth-missing gear part engages with the second rack part.

11. (New) The opening/closing device according to claim 9, wherein the rack member is provided with a pair of inner side portions between which the gear is disposed and which are extended in parallel to each other, and the first rack part is formed in one of a pair of the inner side portions and the second rack part is formed in the other of a pair of the inner side portions.

12. (New) The opening/closing device according to claim 9, wherein the move preventing part of the tooth-missing gear part is formed in a thin plate part whose outer circumferential edge portion is formed in a circular arc shape; and

the first rack part is formed with two parts which are disposed so as to be separated from each other; and

when the rack member is located at at least one of the open position and the close position, the two parts of the rack member are engaged with the thin plate part formed in the circular arc shape to prevent the movement of the rack member.

13. (New) The opening/closing device according to claim 12, wherein the first rack part is formed with a first tooth part, a second tooth part, a third tooth part and a fourth tooth part in this order, and the first tooth part and the third tooth part are the two parts of the rack member which are engaged with the thin plate part of the tooth-missing gear part, and a thickness of the second tooth part is formed thinner than thicknesses of the first tooth part, the third tooth part and the fourth tooth part so that the thin plate part is capable of overlapping in an axial direction with the second tooth part.